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Torrent Ducks of the Andes

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Written and photographed by Paul A. Johnsgard

Throughout the world there is probably no more rigorous environment for waterfowl than that provided by the Andean streams in South America. Rushing down the mountains from an altitude of 18,000 feet or more, tumbling over precipices, the streams eventually merge and grow into such giants as the Orinoco, Amazon, and Rio de la Plata on the Atlantic slope, or empty direct into the Pacific on the west side. In the intermediate elevations, mainly between 5,000 and 10,000 feet, a remarkable duck, fittingly called the torrent duck (*Merganetta armata*) makes its home among the rapids and cataracts. This bird, which ranges from northwestern Venezuela to the sub-Antarctic climate of Tierra de Fuego, occurs in scattered populations throughout the Andean chain wherever its specialized habitat requirements are met. These requirements include cold, well aerated water rich in aquatic insect life, large boulders protruding from the stream to provide resting places and foraging areas, and adjacent cliffs with holes or crevices for use in nesting.

Since roads rarely penetrate the Andes in the areas where torrent ducks thrive, it is not surprising that few biologists have had the good fortune to observe this species in situ. In fact, so little has been learned about torrent ducks that there is considerable doubt as to the number of species that should be recognized, various authorities having suggested that one, three, five, or six different species might exist. With such basic questions in doubt, it is not surprising that uncertainty or even complete ignorance has existed as to the details of the torrent duck's biology, its feeding, nesting, social, and sexual behavior, and its probable evolutionary relationships to other waterfowl.

In the hope of answering at least some of these questions, I had been eager for many years to study the torrent duck. As I had previously studied all of the other 42 living genera of ducks, geese, and swans, *Merganetta* represented my last major goal.

In order to resolve the question of how many species of torrent duck exist, it was necessary to find as many as possible of the six described forms. This meant stopping in at least four countries, from Colombia to Chile, with the

Left: Male Chilean torrent ducks

hope that the birds could be located at reasonable distances from cities. With the support of a National Science Foundation grant, and after a year's planning, I set off with an interpreter assistant in July 1965 for Colombia.

We located the northernmost and (in the case of the males) lightest colored of all the torrent duck populations, near Popayán, where the slopes of the volcano Purace give rise to half a dozen streams that converge down towards the Cauca valley. We found torrent ducks on two of these streams, the Rio Chisbar and the Rio Grande, as well as on the Rio Cauca itself. Although extremely wary, the birds could usually be approached to within 70 yards as they rested on rocks or foraged in the rivers.

When foraging, the ducks typically rest on a large, rounded boulder near the middle of a river; they leap from the boulder into the white water, and disappear from sight for 10 seconds or more; then they suddenly emerge from near the point where they entered the water, and scramble back up the slippery rock surface. When climbing, the long stiffened tail feathers are held down against the rock in much the same manner as woodpeckers use their tail feathers as props.

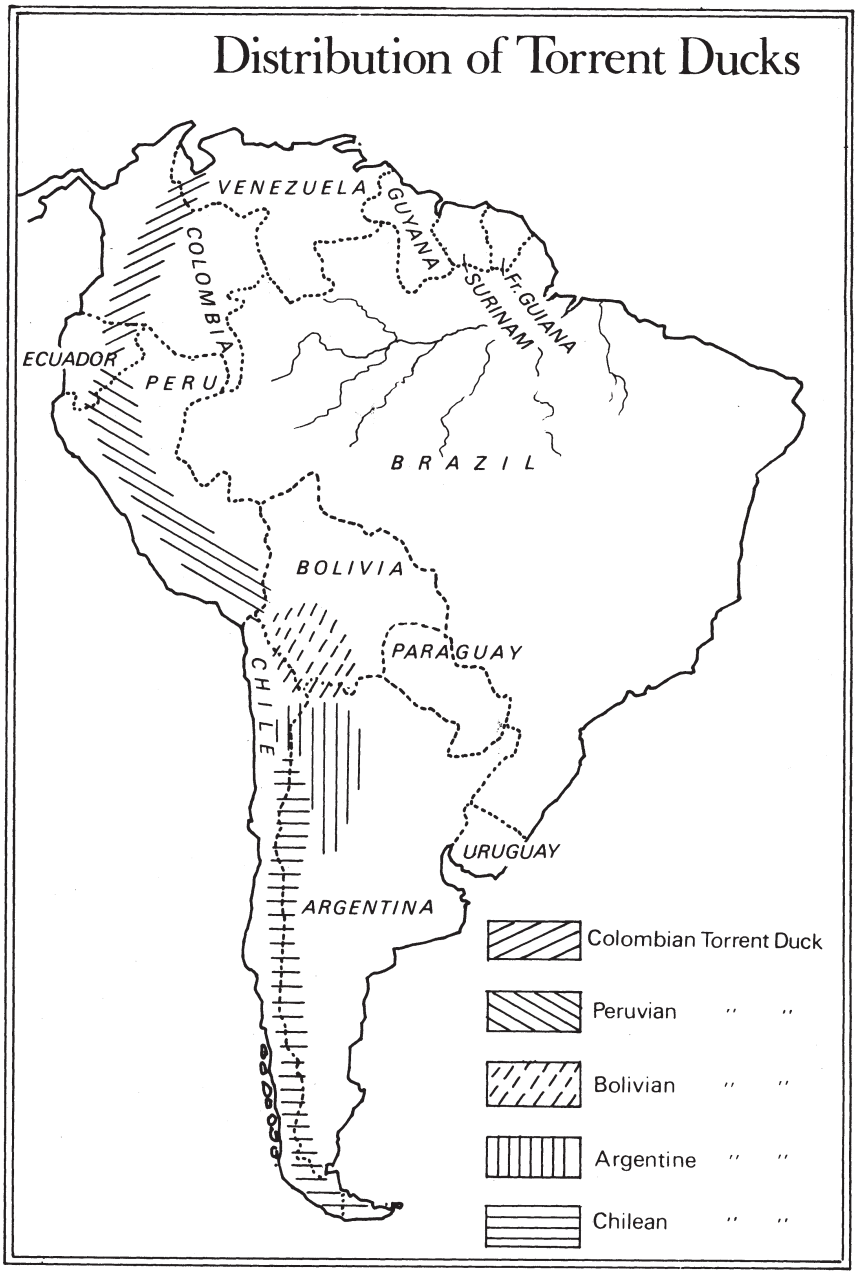
Female torrent ducks are a beautiful rusty red below, dove grey above, and have a conspicuous carmine bill. When swimming, the reddish underparts are mostly below the water, and only the brilliant bill enables one to see the bird in the swirling waters. Likewise, the adult male's grey and white coloration is easily lost to view in the water, particularly if the bird is swimming so low that only its head is exposed. In all the male torrent ducks the white head is distinctively marked with black stripes, and the bill is a brilliant red as in the female. These narrow, soft-tipped bills are used in probing among the rock crevices for larvae of caddisflies and stoneflies, the main source of food for the ducks.

Populations of these birds are never great, and it is rare to see more than a single pair or family at any one place. Unlike most ducks, the male torrent duck remains with the female while the young are being reared, and actively protects the brood when danger threatens. There are usually no more than three in a brood, but the young are highly precocial and shortly after hatching are able to navigate rapids and climb wet rock surfaces with astonishing ease. There has been some doubt as to how these hardy youngsters reach the water from the nest site, which may be located high above the river on a vertical cliff face, often in a natural crevice or an old nest hole of the ringed kingfisher (*Megaceryle torquata*).

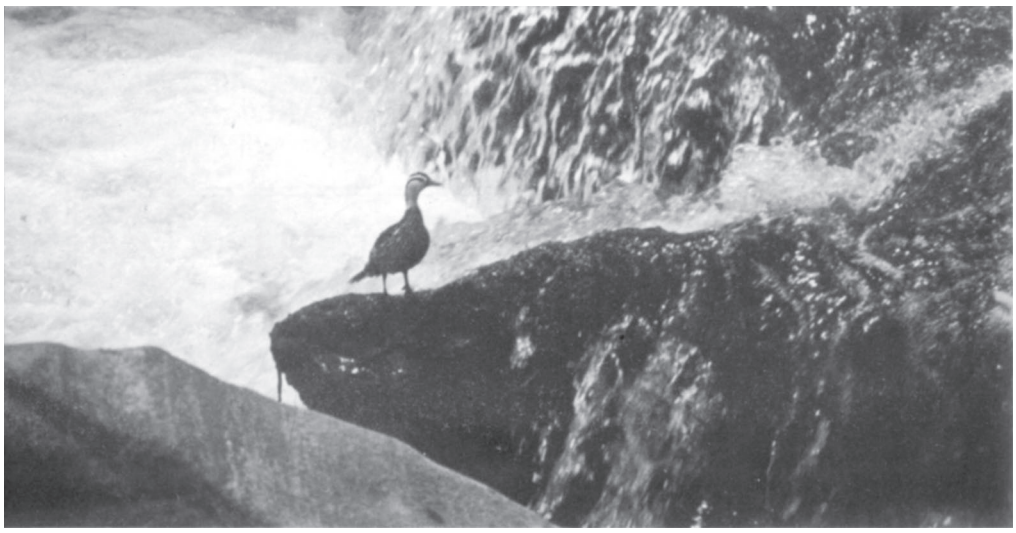
George Moffett had the good fortune of locating two nests of the Chilean torrent duck, one among the roots of a *coihué* tree (*Nothofagus*) on a river bank about 9 feet above water, the other in a cliff crevice some 60 feet above water. After establishing an astonishingly long incubation period of 43 to 44 days, Mr. Moffett observed the young jump from the nest in the cliff crevice and bounce and tumble down the cliff face, finally reaching the water's edge.

I located a family with two recently-hatched young on the Rio Chisbar, in a narrow canyon bounded above and below by nearly vertical cliffs and waterfalls. After the family was disturbed, the male cautiously worked downstream, stopping every 40 or 50 yards to investigate. The female followed a safe distance behind, with the young dutifully following in the wake of their mother as she negotiated the rapids. Occasionally they completely disappeared as they were engulfed by the spray and foam, only to reappear again several yards downstream. The vitality of these tiny chicks, which weigh little more than an ounce at hatching, is simply amazing.

In northern Peru the Colombian torrent duck is replaced by a somewhat darker form, the Peruvian torrent duck. It occurs south as far as Lake Junin in the interior, and also on the west slope of the Andes as far as the coastal desert south of Lima,



Top: Male Bolivian torrent duck. Bottom: Male Turner's torrent duck.



where a few permanent streams reach the Pacific. On one such stream south of Lima, the Rio Lurin, we found the Peruvian torrent duck in a narrow, steep-walled canyon at an elevation of about 6,000 feet. The river was lined with rushes and low trees, and enormous cacti grew out of the rocky crevices, providing a strange contrast to the streamside vegetation. Here, as in Colombia, we found that the white-capped dipper (*Cinclus leucocephala*) was a constant associate of torrent ducks, often using the same rocks for their foraging activities and presumably living on much the same foods.

In the Cuzcan Andes of southern Peru, in the valley of the Vilcanota and Urubamba Rivers, the male torrent ducks reputedly have dark brown or black bodies, although they retain the typical black and white head pattern of the other populations. Few specimens of this form, Turner's torrent duck, have been collected, and I especially wanted to observe it. Fortunately, the railroad between Cuzco and the Inca ruins of Machu Picchu closely follows the Urubamba River, and this river and its tributaries support a good population of torrent ducks. In Huarocondo canyon, for example, we located two families with downy young and nearly half a dozen additional pairs along a 10-mile stretch of river. Although one of the males of this group had a rather dark body and thus might have been regarded as a Turner's torrent duck, the others were not separable from the Peruvian torrent duck. So it is clear that the few dark-bodied males found in this region are not typical of it, simply representing extreme variants from the normal condition. This unusual degree of individual color variation among the males accounts for the otherwise baffling situation of a reputedly dark-bodied form existing between two relatively light-bodied populations, the Peruvian and Bolivian torrent ducks.

The Bolivian torrent duck is primarily found in the "*yungas*," or deep valleys that drain the moist eastern slopes of the central Andean cordilleras. The Rio Zongo, which has its headwaters northeast of La Paz near Mount Potosi, plunges from nearly 16,000 feet to about 6,000 feet in less than 20 miles. A number of hydroelectric dams have been constructed in this narrow canyon, but enough water still flows to support torrent ducks. As we had also earlier discovered in Peru, the Bolivian torrent duck uses a remarkable tactic to escape from danger; he swims over a waterfall several feet high and disappears in the spray below. After this had happened on several occasions, we finally learned that the birds were crawling back into the rocky recesses behind the brink of the fall, and were remaining hidden by the veil of falling water until the danger had passed. One female on the Rio Zongo remained hidden in this manner for over half an hour before finally flying out.

South of Bolivia, in the Tucumán area of Argentina, a fifth form of torrent duck exists. This bird, the Argentine torrent duck, differs little from the previously mentioned forms except that the males are said to exhibit white mantle striping. However, this population is known to be variable in male plumage coloration, and in general is not significantly distinct from the Bolivian population. Therefore, no attempt was made to locate the Argentine torrent duck, and instead we travelled on to Chile to study the southernmost of the populations, the Chilean torrent duck.

While all the torrent ducks are certainly handsome, none is more striking than the male Chilean torrent duck. In this form the facial pattern is rendered distinctive by an extension of black up the neck and throat to merge with the black eye stripe. In addition, the black mantle feathers are broadly edged with white, and the breast and flanks are brown or black.

Torrent ducks increase in abundance as the rainfall increases in central and southern Chile, and in the lake district between Osorno and Puerto Montt the birds seem to be especially prevalent. Although the ducks also occur south of the lake district in Chile, they are evidently less common, and the nearly constant bad weather of southern Chile makes field work in this region practically impossible during most of the year. In this part of Chile torrent ducks are found much nearer to sea level than in central and northern South America and

we located several birds at a height of less than 600 feet on the Petrohué near Lake Esmeralda in the southern lake district. In this location we found only males; the females are said to be much less evident than males during the winter season in Chile. Strangely, these birds were much less wary than any of the other torrent ducks we observed, and it was possible to study them at relatively close range.

As we had already found in the more northerly forms, males of the Chilean torrent duck possess a loud, piercing whistle that can easily be heard above the roar of the river. This serves as a warning call to females, and a similar but softer version is used as an apparent greeting call. The female, however, is evidently much less vocal, and although other observers have described female vocalizations, we were never able to hear any. The downy young (as in most, if not all, ducks) also utter a loud whistle whenever they are separated from their parents.

Probably because of an apparently permanent pair bond in torrent ducks, opportunities for observing pair-forming displays in these birds are greatly reduced. Peter Scott once observed some elaborate male displays in the Bolivian torrent duck, and A. W. Johnson has observed copulatory behavior in the Chilean form. Both described behavior patterns totally unlike the corresponding displays of typical dabbling ducks, and this suggests that the torrent ducks are not closely related to the Salvadori's duck and the other dabbling ducks.

I was fortunate enough to watch display in both the Colombian and Chilean torrent ducks. My observations differed from those of Scott and Johnson, and apparently represented neither pair-forming nor copulatory displays, but rather appeared to be of behavior related to pair maintenance. The male's display consisted of a strong thrusting forward and downward of the head, and a simultaneous raising of the hindquarters and cocking of the long tail, resulting in a seesaw movement for which the legs served as a fulcrum. Since my observations, George Moffett has observed and photographed this display as performed by Chilean torrent ducks in Argentina, noting that it can be directed either towards the mate or other males, and in the latter case seems associated with territorial behavior.

In spite of the marked differences in male plumage patterns from Colombia to Chile, these are probably of little taxonomic significance, since much individual variation is known to occur in some areas. It is quite possible that the generally small populations, and consequent inbreeding within these isolated and sedentary populations, accounts for much of the plumage variation. Furthermore, the male displays that I observed in both Colombian and Chilean populations were identical and agreed with earlier published observations on the Peruvian torrent duck, supporting the hypothesis that only a single species of torrent duck should be recognized. Similarities in the displays and hole-nesting behavior of torrent ducks and perching ducks might be regarded as evidence favoring evolutionary affinities with this latter group of waterfowl.

Regardless of the taxonomic allocation of torrent ducks, nothing can detract from the amazing capabilities of this bird for living in one of the most unlikely and scenically beautiful waterfowl habitats imaginable.

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